

WHAT IS CLAIMED IS:

1. An analog signal measuring device for measuring an analog signal, the analog signal measuring device comprising:

a digital controller comprising:

5 a pulse width modulation (PWM) controller for outputting a pulse signal; and

a counter;

a waveform converter, coupled to the PWM controller, for generating and outputting a carrier signal according to the pulse signal; and

10 a comparator, coupled to the waveform converter and the counter, for comparing the carrier signal to the analog signal and then generating a comparison pulse signal, which enables the counter to start counting and to generate a count value, wherein the digital controller gets a measured value of the analog signal according to the count value.

15 2. The analog signal measuring device according to claim 1, wherein the analog signal is inversely proportional to a duty cycle of the comparison pulse signal.

3. The analog signal measuring device according to claim 2, wherein the comparison pulse signal has a positive edge for enabling the counter to start counting, and a negative edge for disabling the counter from counting.
- 5 4. The analog signal measuring device according to claim 1, wherein the analog signal is a DC voltage.
5. The analog signal measuring device according to claim 1, wherein the waveform converter is an RC circuit.
6. The analog signal measuring device according to claim 1, wherein the
10 waveform converter is a triangle wave generating circuit.
7. The analog signal measuring device according to claim 1, wherein the digital controller further comprises an interrupt controller, which is coupled to the comparator and the counter, for enabling and disabling the counter according to the comparison pulse signal.
- 15 8. The analog signal measuring device according to claim 7, wherein the analog signal is directly proportional to a duty cycle of the comparison pulse signal.
9. The analog signal measuring device according to claim 7, wherein the

comparison pulse signal has a positive edge and a negative edge, the interrupt controller utilizes one of the positive edge and the negative edge to enable the counter to start counting, and the other of the positive edge and the negative edge to disable the counter from counting.

10. The analog signal measuring device according to claim 9, wherein the analog signal is inversely proportional to a duty cycle of the comparison pulse signal.

11. The analog signal measuring device according to claim 7, wherein the analog signal is a DC voltage.

12. An analog signal measuring method utilizing a digital controller having a counter to measure an analog signal, the analog signal measuring method comprising the steps of:

(m). generating a carrier signal according to a pulse signal;

comparing the carrier signal to the analog signal and thus generating a comparison pulse signal; and

(p). enabling the counter to start counting and to generate a count value according to the comparison pulse signal, and getting a measured value

of the analog signal according to the count value.

13. The method according to claim 12, wherein the carrier signal is a triangle wave.

14. The analog signal measuring method according to claim 12, wherein
5 the carrier signal is a sawtooth wave.

15. The analog signal measuring method according to claim 12, wherein step (m) comprises the steps of:

determining a pulse width of the pulse signal according to a low-voltage level; and

10 generating the carrier signal according to the pulse signal.

16. The analog signal measuring method according to claim 12, wherein the comparison pulse signal has a positive edge and a negative edge, and the step (p) comprises the steps of:

15 setting the digital controller to a negative-edge trigger interruption mode;

triggering the digital controller by the negative edge to enable the counter to start counting, and setting the digital controller to a positive-edge

trigger interruption mode;

triggering the digital controller by the positive edge to disable the
counter from counting; and

getting the measured value of the analog signal according to the count
5 value.

17. The analog signal measuring method according to claim 16, wherein
the carrier signal is a triangle wave.

18. The analog signal measuring method according to claim 17, wherein
the analog signal is a DC voltage.

10 19. The analog signal measuring method according to claim 16, wherein
the step (m) includes the steps of:

determining a pulse width of the pulse signal according to a low-voltage
level; and

generating the carrier signal according to the pulse signal.

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